We Claim:

1. A thermoelectric module comprised of:

   A) a plurality of n-legs comprised of very thin alternating layers of silicon and silicon carbide; and

   B) a plurality of p-legs,;

   said p-legs and said n-legs being electrically connected to produce said thermoelectric module.

2. A thermoelectric module as in Claim 1 wherein said p-legs comprise very thin alternating layers of boron carbide.

3. A thermoelectric module as in Claim 2 wherein said very thin alternating layers of boron carbide comprise two different stoichiometric forms of boron carbide.

4. A thermoelectric module as in Claim 3 wherein said very thin alternating layers of boron carbide are alternating layers of B_4C and B_9C.

5. A thermoelectric module as in Claim 2, wherein said plurality of n-legs is comprised of a plurality of very thin alternating layers of silicon and silicon-carbide and said very thin alternating layers of boron carbide are alternating layers of B_4C and B_9C.

6. A thermoelectric module as in Claim 1 wherein said alternating layers are deposited on a substrate.

7. A thermoelectric module as in Claim 6 wherein said substrate is silicon.

8. A thermoelectric module as in Claim 6 wherein said substrate is silicon film.

9. A thermoelectric module as in Claim 6 wherein said substrate is a polyimide substrate.

10. A thermoelectric element as in Claim 9, wherein said polyimide substrate is Kapton®.

11. A thermoelectric element as in Claim 10, wherein said polyimide substrate is Kapton® film.

12. A thermoelectric element as in Claim 1, wherein said very thin alternating layers are each less than 100nm thick.

13. A thermoelectric element as in Claim 1 wherein said very thin alternating layers are each about 10 nm thick.

14. A thermoelectric element as in Claim 9 wherein said plurality of very thin alternating layers is at least 1250 layers.